

GENERAL ASSEMBLY RETIREMENT SYSTEM
OF ILLINOIS

ACTUARIAL VALUATION
AS OF JUNE 30, 1997

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October 9, 1997

Board of Trustees
General Assembly Retirement System
2101 South Veterans Parkway
P.O. Box 19255
Springfield, Illinois 62794-9255

Re: Actuarial Valuation as of June 30, 1997

Dear Board Members:

I am pleased to submit our actuarial report on the financial position and funding requirements of the General Assembly Retirement System based on the actuarial valuation as of June 30, 1997.

The report consists of 12 Sections and 2 Appendices as follows:

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I would be pleased to discuss any aspects of this report with you and other interested persons.

Respectfully submitted,



Sandor Goldstein
Fellow of the Society of Actuaries
Enrolled Actuary No. 96-3402

A. PURPOSE AND SUMMARY

We have carried out an actuarial valuation of the General Assembly Retirement System of Illinois as of June 30, 1997. The purpose of the valuation was to determine the financial position and funding requirements of the retirement system. This report is intended to present the results of the valuation. The results are summarized below:

1. Total actuarial liability	\$143,836,605
2. Actuarial value of assets	56,709,651
3. Unfunded actuarial liability	87,126,954
4. Funded Ratio	39.4%
5. Employer contribution requirement for FY 99 under Public Act 88-0593	\$ 3,504,000
6. Annual required contribution for FY 99 under GASB Statement No. 25	\$ 6,092,002

B. DATA USED FOR THE VALUATION

Participant Data. The participant data required to carry out the valuation was supplied by the retirement system. The membership of the system as of June 30, 1997, on which the valuation was based, is summarized in Exhibit 1. It can be seen that there were 181 active members, 223 members receiving retirement annuities, 129 members receiving survivor's annuities, and 3 members receiving reversionary annuities included in the valuation. The total active payroll as of June 30, 1997 was \$9,986,015.

Exhibit 1

Summary of Membership Data

1. Number of Members	
(a) Active Members	
(i) Vested	129
(ii) Non-vested	52
(b) Members Receiving	
(i) Retirement Annuities	223
(ii) Survivor's Annuities	129
(iii) Reversionary Annuities	3
(c) Inactive Members	113
2. Annual Salaries (Active Members)	
(a) Total Salary	\$ 9,986,015
(b) Average Salary	55,171
3. Total Accumulated Employee Contributions of Active Members	\$ 7,667,650
4. Annual Annuity Payments	
(a) Retirement Annuities	\$ 6,157,710
(b) Survivor's Annuities	1,484,110
(c) Reversionary Annuities	16,644

Assets. In November of 1994, the Governmental Accounting Standards Board (GASB) issued GASB Statement No. 25, which establishes standards of financial reporting for governmental pension plans. The statement is effective for periods beginning after June 15, 1996. Under GASB Statement No. 25, the actuarial value of assets to be used for determining a plan's funded status and annual required contribution needs to be market related.

The asset value used for the valuation was based on the asset information contained in the statement of assets as of June 30, 1997 prepared by the system. For purposes of the valuation, the market value of the assets of the system, less the amount of liabilities, was used. For previous actuarial valuations, the book value of assets had been used. The resulting actuarial value of assets was \$56,709,651. The development of this value is outlined in Exhibit 2.

Exhibit 2

Actuarial Value of Assets

1. Cash	\$ 2,113,679
2. Receivables	9,625
3. Investments - Held in the Illinois State Board of Investment Commingled Fund, at Market Value	54,674,448
4. Equipment	<u>9,028</u>
5. Total Assets	\$ 56,806,780
6. Liabilities	<u>97,129</u>
7. Actuarial Value of Assets (5-6)	<u>\$ 56,709,651</u>

C. RETIREMENT SYSTEM PROVISIONS

The actuarial valuation was based on the provisions of the retirement system in effect as of June 30, 1997 as provided in Article 2 of the Illinois Pension Code. Since the effective date of our last valuation, Senate Bill 665, which was signed into law on August 16, 1997 as Public Act 90-0448 made some relatively minor changes in the provisions of the system.

Public Act 90-0448 stipulates the proper recipient of a lump sum death benefit in situations where the member and his or her survivors have received less than the value of contributions made at the time of death. The changes made under Public Act 90-0448 did not have an impact on the results of the June 30, 1997 actuarial valuation. A summary of the principal provisions of the system in effect as of June 30, 1997 is provided in Appendix 1.

D. ACTUARIAL ASSUMPTIONS AND COST METHOD

Actuarial Assumptions

Based on an analysis of the experience of the System over the period five-year period 1991-1996, we have made some changes in the actuarial assumptions used for the June 30, 1997 actuarial valuation. These changes were as follows: (1) The mortality table assumption was changed from the UP-1984 Mortality Table to the UP-1994 Mortality Table; (2) Termination rates have been increased to bring them more in line with recent termination experience; and (3) Retirement rates have been decreased to bring them more in line with recent retirement experience. The other actuarial assumptions used for the June 30, 1997 actuarial valuation are the same as the assumptions used for the June 30, 1996 actuarial valuation. The major actuarial assumptions used for the current valuation are summarized below:

Mortality Rates. For active and retired members: UP-1994 Mortality Table for Males, rated up 2 years. For spouses: UP-1994 Mortality Table for Females, rated up 1 year.

Termination Rates. The following termination rates were used:

<u>Age</u>	<u>Rate of Termination</u>
20 - 65	.090
66 and over	.000

Disability Rates. The following is a sample of the disability rates that were used for the valuation:

<u>Age</u>	<u>Rate of Disability</u>
30	.00057
35	.00064
40	.00083
45	.00115
50	.00170
55 and over	.00000

Retirement Rates. Rates of retirement for each age from 55 to 80 based on the recent experience of the system were used. The following are samples of the rates of retirement that were used:

<u>Age</u>	<u>Rate of Retirement</u>
55	.18
60	.16
65	.17
70	.20
75	.20
80	1.00

The above retirement rates are equivalent to an average retirement age of approximately 64.

Salary Increase. A salary increase assumption of 6.5% per year, compounded annually, was used. This 6.5% salary increase assumption can be considered to consist of a general increase component of 5% per year, 4.0% of which is attributable to inflation, and a seniority/merit component of 1.5% per year.

Interest Rate. An interest rate assumption of 8.0% per year, compounded annually, was used. This interest rate assumption can be considered to consist of an inflation component of 4.0% per year and a real rate of return of 4.0% per year.

Marital Status. It was assumed that 75% of active members will be married at the time of retirement.

Spouse's Age. The age of the spouse was assumed to be 4 years younger than the age of the employee.

Actuarial Cost Method

The projected unit credit actuarial cost method was used for the June 30, 1997 valuation. Actuarial gains and losses are reflected in the unfunded actuarial liability. This is the same actuarial cost method that was used for the June 30, 1996 valuation.

E. ACTUARIAL LIABILITY

The actuarial liability as determined under the valuation for the various classes of members is summarized in Exhibit 3. The total actuarial liability is then compared with the actuarial value of assets in order to arrive at the unfunded actuarial liability. (The actuarial terms used in this report are defined in Appendix 2.)

As of June 30, 1997, the total actuarial liability is \$143,836,605, the actuarial value of assets is \$56,709,651, and the unfunded actuarial liability is \$87,126,954. The ratio of the actuarial value of assets to the actuarial liability, or funded ratio, is 39.4%.

Exhibit 3

Actuarial Liability As of June 30, 1997

1. Actuarial Liability For Active Members	
(a) Basic retirement annuity	\$ 19,423,789
(b) Annual increase in retirement annuity	5,568,747
(c) Pre-retirement survivor's annuity	1,788,415
(d) Post-retirement survivor's annuity	2,776,286
(e) Withdrawal benefits	7,058,162
(f) Disability benefits	<u>160,792</u>
(g) Total	\$ 36,776,191
2. Actuarial Liability For Members Receiving Benefits	
(a) Retirement annuities	\$ 69,834,621
(b) Survivor annuities (Including reversionary)	<u>12,698,753</u>
(c) Total	\$ 82,533,374
3. Actuarial Liability For Inactive Members	<u>24,527,040</u>
4. Total Actuarial Liability	<u>\$143,836,605</u>
5. Actuarial Value of Assets	<u>56,709,651</u>
6. Unfunded Actuarial Liability	<u>\$ 87,126,954</u>
7. Funded Ratio	39.4%

Impact of Changes in Actuarial Assumptions. We have estimated that the changes made in the actuarial assumptions used for the June 30, 1997 actuarial valuation had the impact of increasing the total actuarial liability by \$8,642,481.

F. EMPLOYER'S NORMAL COST

The employer's share of the normal cost for the year beginning July 1, 1997 is developed in Exhibit 4. For the year beginning July 1, 1997, the total normal cost is determined to be \$3,264,559. Employee contributions are estimated to be \$1,148,392. The resulting employer's share of the normal cost is \$2,116,167.

Based on a payroll of \$9,986,015, the employer's share of the normal cost can be expressed as 21.19% of payroll.

Exhibit 4

Employer's Normal Cost For Year Beginning July 1, 1997

	<u>Dollar Amount</u>	<u>Percent of Payroll</u>
1. Basic retirement annuity	\$ 1,436,720	14.39%
2. Annual increase in retirement annuity	416,642	4.17
3. Pre-retirement survivor's annuity	152,700	1.53
4. Post-retirement survivor's annuity	198,056	1.98
5. Withdrawal benefits	820,518	8.22
6. Disability benefits	15,716	.16
7. Administrative expenses	224,207	2.24
8. Total normal cost	\$ 3,264,559	32.69%
9. Employee contributions	1,148,392	11.50
10. Employer's share of normal cost	<u>\$ 2,116,167</u>	<u>21.19%</u>

Note. The above figures are based on total active payroll of \$9,986,015 as of June 30, 1997.

G. STATE CONTRIBUTION REQUIREMENTS

Senate Bill 533, which was signed into law on August 22, 1995 as Public Act 88-0593, enacted the following funding plan for the system:

For fiscal years 2011 through 2045, the minimum State contribution to the system for each fiscal year shall be an amount determined by the system to be sufficient to bring the total assets of the system up to 90% of the total actuarial liabilities by the end of fiscal year 2045. In making these determinations, the required State contribution shall be calculated as a level percentage of payroll over the years through 2045. For fiscal years 1997 through 2010, the State contribution, as a percentage of the applicable payroll shall be increased in equal annual increments so that by fiscal year 2011, the State is contributing at the required rate.

Based on the June 30, 1997 actuarial valuation, we have determined the required State contributions under this plan for fiscal year 1999. We have also estimated required contributions for fiscal years 2000 through 2003 as well as for fiscal years 2005 and 2010. The required State contribution rates and amounts are as follows:

<u>Fiscal Year</u>	<u>Projected Payroll</u>	<u>Required State Contribution as a Percent of Payroll</u>	<u>Required State Contribution as a Dollar Amount</u>
1999	\$ 10,467,000	33.48%	\$ 3,504,000
2000	10,972,000	35.79	3,927,000
2001	11,475,000	38.10	4,372,000
2002	11,990,000	40.41	4,845,000
2003	12,483,000	42.72	5,333,000
2005	13,654,000	47.34	6,464,000
2010	17,235,000	58.89	10,150,000

Method of Calculation

The contribution requirements shown above have been determined using the actuarial assumptions, membership data and benefit provisions that were used for the regular actuarial valuation. However, in order to determine the contribution requirements, certain calculations needed to be made that are not normally required in a regular actuarial valuation. Benefit payout requirements, normal costs, and payroll were estimated over the 48-year period from 1998 through 2045 by projecting the membership of the system over the 48-year period, taking into account the impact of new entrants to the system over the 48-year period.

In order to make the required projections, assumptions needed to be made regarding the age and salary distribution of new entrants as well as the size of the active membership of the system. The assumptions regarding the profile of new entrants to the system was based on the recent experience of the system with regard to new entrants. The size of the active membership of the system was assumed to remain constant over the 48-year projection period.

H. ANNUAL REQUIRED CONTRIBUTION FOR GASB STATEMENT NO. 25

GASB Statement No. 25 requires the disclosure of the annual required employer contribution (ARC), calculated in accordance with certain parameters. Based on the results of the June 30, 1997 actuarial valuation, we have therefore calculated the annual required contribution for the fiscal year ending on June 30, 1999. In accordance with the parameters prescribed in GASB Statement No. 25, in calculating the annual required contribution, we have used market value for the actuarial value of assets and have used a 40-year level percent of payroll

amortization of the unfunded liability. On this basis, the annual required contribution for Fiscal Year 1999 has been determined to be as follows:

	<u>Fiscal Year 1999</u>
1. Employer's normal cost	\$ 2,217,952
2. Annual amount to amortize the unfunded liability over 40 years as a level percent of payroll	<u>3,874,050</u>
3. Annual required contribution (1+2)	<u>\$ 6,092,002</u>

I. RECONCILIATION OF CHANGE IN UNFUNDED LIABILITY

The net actuarial experience during the period July 1, 1996 to June 30, 1997 resulted in an increase in the system's unfunded actuarial liability of \$2,386,937. This increase in unfunded liability is a result of several kinds of gains and losses as illustrated in Exhibit 5.

The employer funding requirement for the year of normal cost plus interest on the unfunded actuarial liability amounted to \$8,316,943, whereas the actual employer contribution for the year amounted to \$2,787,074. Thus, the employer contribution for the year fell short of meeting normal cost plus interest on the unfunded liability by \$5,529,869. Had all aspects of the system's experience been in line with the actuarial assumptions, the unfunded liability would have increased by this amount.

The net rate of investment return earned by the net assets of the system, based on assets valued at market, was approximately 18.2% in comparison with the

assumed rate of investment return of 8.0%. This resulted in a decrease in the unfunded liability of \$5,057,646. Salaries increased at a rate of approximately 6.48%, in comparison with an assumed rate of increase of 6.5% per year, resulting in a decrease in the unfunded liability of \$7,735.

The changes in the actuarial assumptions used for the June 30, 1997 actuarial valuation had the impact of increasing the actuarial liability by \$8,642,481. The change in the method used to determine the actuarial value of assets from book value to market value had the impact of decreasing the unfunded liability by \$8,779,362.

Salary increases of inactive members who are participants in other Illinois public retirement systems resulted in an increase in the unfunded liability of \$1,306,192. The various other aspects of the system's experience resulted in a net increase in the unfunded liability of \$753,138. The aggregate financial experience of the system resulted in an increase in the unfunded liability of \$2,386,937.

Exhibit 5

Reconciliation of Change in Unfunded Liability
Over the Period July 1, 1996 to June 30, 1997

1. Unfunded actuarial liability as of 7/1/96	\$ 84,740,017
2. Employer contribution requirement of normal cost plus interest on the unfunded liability for the period 7/1/96 to 6/30/97	8,316,943
3. Actual employer contribution for the year	<u>2,787,074</u>
4. Increase in unfunded liability due to employer contributions being less than normal cost plus interest on unfunded liability	5,529,869
5. Decrease in unfunded liability due to investment return higher than assumed	(5,057,646)
6. Decrease in unfunded liability due to salary increases higher than assumed	(7,735)
7. Increase in unfunded liability due to salary increases for inactive members	1,306,192
8. Increase in unfunded liability due to changes in actuarial assumptions	8,642,481
9. Decrease in unfunded liability due to change in method use to determine actuarial value of assets	(8,779,362)
10. Increase in unfunded liability due to other sources	<u>753,138</u>
11. Net increase in unfunded liability for the year	<u>\$ 2,386,937</u>
12. Unfunded actuarial liability as of 6/30/97 (1+11)	<u>\$ 87,126,954</u>

J. PROJECTION OF BENEFITS, CONTRIBUTIONS, AND LIABILITIES

Based on the results of the June 30, 1997 valuation and using the actuarial assumptions used for the valuation, we have projected valuation results for a 48-year period commencing with Fiscal Year 1998. We have based State contributions on the contribution requirements in the funding plan established under Public Act 88-0593. The results of our projections are shown in Exhibit 7.

K. NET PENSION OBLIGATION

GASB Statement No. 27 requires governmental employers to disclose the Net Pension Obligation (NPO), the cumulative difference between the annual pension cost and the actual employer contribution. We have therefore determined the Net Pension Obligation as of June 30, 1997 in accordance with the requirements of GASB Statement No. 27. As required under GASB Statement No. 27, our calculations include all fiscal years between December 15, 1986 and June 30, 1997. For each fiscal year, an annual pension cost was determined as the annual required contribution (ARC), one year's interest on the NPO, and an adjustment to the ARC.

The results of our calculations are summarized in Exhibit 8. As can be seen from Exhibit 8, the Net Pension Obligation as of June 30, 1997 was determined to be \$36,416,095.

L. CERTIFICATION

This actuarial report has been prepared in accordance with generally accepted actuarial principles and practices and to the best of our knowledge, fairly represents the financial condition of the General Assembly Retirement System of Illinois as of June 30, 1997.

Respectfully submitted,



Sandor Goldstein
Fellow of the Society of Actuaries
Enrolled Actuary 96-3402



Carl J. Smedinghoff
Associate of the Society of Actuaries

EXHIBIT 7

GENERAL ASSEMBLY RETIREMENT SYSTEM OF ILLINOIS
PROJECTION OF COSTS, BENEFITS, AND LIABILITIES
(State Contributions Are Based on Public Act 88-0593)
(All Dollar Amounts in Millions)

		Fiscal Year Ending 6/30					
		1998	1999	2000	2001	2002	2003
<u>BASIC DATA</u>							
1. Number of Active Members	181	181	181	181	181	181	181
2. Expected Total Payroll	\$ 10.0	\$ 10.5	\$ 11.0	\$ 11.5	\$ 12.0	\$ 12.5	\$ 12.5
<u>VALUATION RESULTS</u>							
3. Actuarial Liability (Retired Lives Reserve)	\$148.0 (82.1)	\$152.1 (84.4)	\$156.3 (86.7)	\$160.4 (89.0)	\$164.6 (91.3)	\$168.8 (93.6)	\$168.8 (93.6)
4. Assets (Market Value)	\$ 55.3	\$ 53.8	\$ 52.2	\$ 50.5	\$ 48.7	\$ 46.9	\$ 46.9
5. Unfunded Actuarial Liability (Funded Percentage)	\$ 92.7 (37.4)	\$ 98.3 (35.3)	\$104.1 (33.4)	\$109.9 (31.5)	\$115.9 (29.6)	\$121.9 (27.8)	\$121.9 (27.8)
6. Annual Normal Cost							
(a) Total	\$ 3.3	\$ 3.4	\$ 3.6	\$ 3.8	\$ 3.9	\$ 4.1	\$ 4.1
(b) Employee Contributions	1.1	1.2	1.3	1.3	1.4	1.4	1.4
(c) Employer's Share	2.2	2.2	2.3	2.5	2.5	2.7	2.7
(% of Total Payroll)	(21.19)	(21.18)	(21.15)	(21.31)	(21.13)	(21.16)	(21.16)
7. State Contribution (% of Total Payroll)	\$ 3.1 (31.17)	\$ 3.5 (33.48)	\$ 3.9 (35.79)	\$ 4.4 (38.10)	\$ 4.8 (40.41)	\$ 5.3 (42.72)	\$ 5.3 (42.72)
8. Estimated Total Expenses (Benefits, Refunds and Administrative Expenses)	\$ 8.4	\$ 9.0	\$ 9.6	\$ 10.2	\$ 10.9	\$ 11.5	\$ 11.5
9. Accumulated Contributions (Actives and Inactives)	\$ 12.5	\$ 13.1	\$ 13.7	\$ 14.3	\$ 14.9	\$ 15.6	\$ 15.6

Note: In determining State contributions for FY 1998, book value of assets was used. In determining State contributions for FY 1999 and later, market value of assets was used.

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EXHIBIT 7 (CONTINUED)

GENERAL ASSEMBLY RETIREMENT SYSTEM OF ILLINOIS
PROJECTION OF COSTS, BENEFITS, AND LIABILITIES
(State Contributions Are Based on Public Act 88-0593)
(All Dollar Amounts in Millions)

		Fiscal Year Ending 6/30		
		2005	2010	2020
				2030
				2045
<u>BASIC DATA</u>				
1. Number of Active Members	181	181	181	181
2. Expected Total Payroll	\$ 13.7	\$ 17.2	\$ 27.8	\$ 45.1
				\$ 93.7
<u>VALUATION RESULTS</u>				
3. Actuarial Liability (Retired Lives Reserve)	\$177.4 (98.4)	\$202.3 (112.2)	\$279.8 (155.3)	\$418.1 (232.2)
				\$843.9 (468.5)
4. Assets (Market Value)	\$ 43.5	\$ 40.2	\$ 63.8	\$166.3
				\$759.6
5. Unfunded Actuarial Liability (Funded Percentage)	\$133.9 (24.5)	\$162.1 (19.9)	\$216.0 (22.8)	\$251.8 (39.8)
				\$ 84.3 (90.0)
6. Annual Normal Cost				
(a) Total	\$ 4.5	\$ 5.6	\$ 9.1	\$ 14.7
(b) Employee Contributions	1.6	2.0	3.2	5.2
(c) Employer's Share	2.9	3.6	5.9	9.5
(% of Total Payroll)	(21.19)	(21.18)	(21.14)	(21.14)
				(21.15)
7. State Contribution (% of Total Payroll)	\$ 6.5 (47.34)	\$ 10.2 (58.89)	\$ 16.3 (58.89)	\$ 26.6 (58.89)
				\$ 55.2 (58.89)
8. Estimated Total Expenses (Benefits, Refunds and Administrative Expenses)	\$ 12.6	\$ 14.9	\$ 19.6	\$ 27.6
				\$ 51.4
9. Accumulated Contributions (Actives and Inactives)	\$ 17.1	\$ 21.5	\$ 34.8	\$ 56.5
				\$117.4

Note: In determining State contributions for FY 1998, book value of assets was used. In determining State contributions for FY 1999 and later, market value of assets was used.

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EXHIBIT 8

GENERAL ASSEMBLY RETIREMENT SYSTEM

CALCULATION OF NET PENSION OBLIGATION AS OF JUNE 30, 1997 UNDER GASB STATEMENT NO. 27

DATE OF TRANSITION TO GASB STATEMENT NO. 27 IS JULY 1, 1996

Fiscal Year	Annual Required Contribution*	Interest on NPO	Adjustment to ARC**	Pension Cost	Actual Employer Contribution	Change in NPO	Net Pension Obligation
1988	3,390,803	0	0	3,390,803	1,970,000	1,420,803	0
1989	3,641,253	106,560	108,455	3,639,358	1,997,500	1,641,858	1,420,803
1990	3,460,508	245,013	246,288	3,459,233	2,072,600	1,386,633	3,062,661
1991	5,249,439	355,944	357,795	5,247,588	2,072,600	3,174,988	4,449,294
1992	5,513,388	609,943	613,116	5,510,215	1,965,600	3,544,615	7,624,282
1993	5,668,411	893,512	898,161	5,663,762	2,201,000	3,462,762	11,168,897
1994	6,462,239	1,170,533	1,176,623	6,456,149	2,116,800	4,339,349	14,631,659
1995	7,168,649	1,517,681	1,525,577	7,160,753	2,148,200	5,012,553	18,971,008
1996	7,942,130	1,918,685	1,928,668	7,932,147	2,400,000	5,532,147	23,983,561
1997	4,939,052	2,361,257	1,256,201	6,044,108	2,738,000	3,306,108	29,515,708***
							32,821,816

* For Fiscal Years 1988 through 1996, the Annual Required Contribution was calculated as the APB-8 requirement of normal cost plus a 40-year level-dollar amortization of the unfunded liability. For Fiscal Year 1997, the Annual Required Contribution was calculated as normal cost plus a 40-year level-percent-of-payroll amortization of the unfunded liability.

** For Fiscal Years 1988 through 1996, the Adjustment to the ARC was calculated as a 40-year level-dollar amortization of the Net Pension Obligation. For Fiscal Year 1997, the Adjustment to the ARC was calculated as a 40-year level-percent-of-payroll amortization of the Net Pension Obligation.

*** Equals Net Liability at Transition.

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Appendix 1

Summary of Principal Provisions

1. Participation. A person eligible for membership must participate in the system as a condition of employment unless an "Election Not to Participate" is filed within 24 months from the date of assuming office.

2. Member Contributions. All members of the system are required to contribute to the system the following percentage of their salaries:

Retirement Annuity	8.5%
Automatic Annuity Increase	1.0
Survivor's Annuity	<u>2.0</u>
Total	11.5%

3. Retirement Annuity - Eligibility. A member who has at least 8 years of creditable service is entitled to a retirement annuity upon attainment of age 55. A member with at least 4 years of service but less than 8 years of service is entitled to a retirement annuity upon attainment of age 62.

A member with at least 8 years of service who becomes disabled while in service is entitled to a retirement annuity regardless of age.

4. Retirement Annuity - Amount. The retirement annuity is determined according to the following formula based upon the member's final rate of salary:

- 3.0% for each of the first 4 years of service, plus
- 3.5% for each of the next 2 years of service, plus
- 4.0% for each of the next 2 years of service, plus
- 4.5% for each of the next 4 years of service, plus
- 5.0% for each year of service in excess of 12

The maximum retirement annuity is 85% of the final rate of salary.

5. Automatic Increase In Retirement Annuity. (a) Annual automatic increases of 3% of the current amount of retirement annuity are provided. The initial increase is effective in the month of January or July of the year next following the year in which the first anniversary of retirement occurs, but in no event prior to attainment of age 60.

(b) Beginning January 1, 1990, for participants who remain in service after attaining 20 years of creditable service, 3% annual automatic increases begin to accrue on January 1 next following the date the participant attains age 55 or completes 20 years of creditable service, whichever occurs later. For any person who has service credit for the entire period from January 15, 1969 through December 31, 1992, the increases shall accrue from age 50 instead of age 55. However, such increases shall not become payable until January 1 next following the first anniversary of retirement, but in no event prior to attainment of age 60.

6. Survivor's Annuity - Eligibility. A surviving spouse without children is eligible for survivor benefits at age 50 or over provided marriage to the member had been in effect for at least 1 year immediately prior to the member's death.

A surviving spouse with unmarried eligible children of the member is eligible for a survivor's annuity benefit at any age provided the above marriage requirements have been met. When all children are disqualified because of death, marriage or attainment of age 18 or age 22 in the case of a full-time student, the spouse's benefit is suspended if the spouse is under age 50 until the attainment of such age.

An unmarried child of the member under age 18 or under age 22 and a full-time student or over age 18 and disabled may qualify for the survivor's annuity if there is no surviving spouse or if the spouse remarries prior to attainment of age 55 or dies.

If the member dies in service as a member, the member must have at least 2 years of service credit for survivor's annuity eligibility. If death occurs after termination of service but before retirement, the deceased member must have at least 4 years of service credit for survivor's annuity eligibility.

7. Survivor's Annuity - Amount. (a) A surviving spouse is entitled to a survivor's annuity of $66 \frac{2}{3}\%$ of the amount of retirement annuity to which the member was entitled on the date of death, without regard to whether the member had attained age 55 as of the time of death, subject to a minimum payment of 10% of salary.

(b) If a surviving spouse has in his or her care eligible children of the member, the survivor's annuity shall be the greater of the following:

(1) $66 \frac{2}{3}\%$ of the amount of retirement annuity to which the member was entitled on the date of death, or (2) 30% of the member's salary increased by 10% of salary on account of each eligible child, subject to a total payment for the surviving spouse and children of 50% of salary. If only unmarried children survive, each such child shall be entitled to an annuity of 20% of salary, subject to a maximum total payment for all children of 50% of salary.

(c) Upon the death of a member after termination of service, or upon the death of an annuitant, the maximum total payment to a surviving spouse and eligible children, or eligible children alone if there is no surviving spouse, shall be 75% of the retirement annuity to which the member or annuitant was entitled.

(d) Survivor's annuities are subject to annual automatic increases of 3% of the current amount of annuity.

(e) The minimum survivor's annuity provided by the system is \$300 per month.

(f) In the case of a proportional survivor's annuity under the Retirement Systems Reciprocal Act, if the amount payable by the system on January 1, 1993 is less than \$300 per month, the amount shall be increased as of that date by \$2 per month for each full year elapsed since the annuity began.

8. Refund of Contributions. Upon termination of service, a member is entitled to a refund of his total contributions without interest.

If unmarried at the time of retirement, a member is entitled to a refund of his or her contributions for the survivor's annuity.

Appendix 2

Glossary of Terms used in Report

1. Actuarial Present Value. The value of an amount or series of amounts payable at various times, determined as of a given date by the application of a particular set of actuarial assumptions.
2. Actuarial Cost Method or Funding Method. A procedure for determining the actuarial present value of pension plan benefits and for determining an actuarially equivalent allocation of such value to time periods, usually in the form of a normal cost and an actuarial accrued liability.
3. Normal Cost. That portion of the actuarial present value of pension plan benefits which is allocated to a valuation year by the actuarial cost method.
4. Actuarial Liability or Accrued Liability. That portion, as determined by a particular actuarial cost method, of the actuarial present value of pension benefits which is not provided for by future normal costs.
5. Actuarial Value of Assets. The value assigned by the actuary to the assets of the pension plan for purposes of an actuarial valuation.
6. Unfunded Actuarial Liability. The excess of the actuarial liability over the actuarial value of assets.
7. Projected Unit Credit Actuarial Cost Method. A cost method under which the projected benefits of each individual included in an actuarial valuation are allocated by a consistent formula to valuation years. The actuarial present value of benefits allocated to a valuation year is called the normal cost. The actuarial present value of benefits allocated to all periods prior to a valuation year is called the actuarial liability.

Under this method, the actuarial gains (losses), as they occur, generally reduce (increase) the unfunded actuarial liability.
8. Actuarial Assumptions. Assumptions as to future events affecting pension costs.
9. Actuarial Valuation. The determination, as of a valuation date, of the normal cost, actuarial liability, actuarial value of assets, and related actuarial present values for a pension plan.